

**The Relationship between Formal and Informal Remittance Systems in the Light of  
Financial Exclusion of International Migration**

by Dulce Redín

School of Economics and Business Administration,

University of Navarra, Spain

**Abstract**

This paper explores the link between recorded remittance inflows and Informal Remittance Systems (IRS). Constructing a new panel data from 1970-1998 and applying System-GMM approach, we show that there is a strong substitution effect between formal remittances and the activity of IRS. Specifically, we find that the impact is greater in developing countries. This effect is associated with different dimensions of financial exclusion. We conclude by stressing the need for policy and business responses to integrate informal remittances into the regulated financial system to make full use of their developmental potential and fight against the financial exclusion of international migration

**Keywords:** *Alternative Remittance Systems, Remittances, Black Market Premium, Informal Remittances, Financial Exclusion, Migration.*

**JEL Codes:** F65, G21, O12, O15, O17

## 1. Introduction

Migrant remittances are the “transfers in cash or kind from migrants to resident households in the country of origin” (Bilsborrow et al. 1997, p. 321). There is a growing consensus on the importance of international remittances on development and poverty alleviation of receiving countries (Bourguignon, 2006; Adams and Page, 2003). In recent years, governments and international organizations have started to show an active interest on this source of external finance mainly because of the following events. On the one hand, international remittances to developing countries have grown rapidly and they have been more stable than other financial flows during the financial crisis (Ratha 2003; World Bank, 2011). In many developing countries migrant remittances represents a large percentage of their GDP. They are larger than official development assistance and portfolio investment, and in the last years they have approached the magnitudes of foreign direct investment flows (Yang, 2011). On the other hand, the continuous decline of public foreign aid (Kim and Shaw, 2003; Government Accountability Office (GAO), 2005) has increasingly pressure poor countries to look for alternative source of development financing. The recent improvements in international remittance statistics, although modest, have increased governments’ awareness of the potential of international remittances to contribute to poverty alleviation, economic growth, and development (Benmamoun and Lehnert, 2013). Still, the true size of remittances is believed to be larger, since official recorded flows do not account for informal remittances.

There is no consensus about what is the true magnitude of remittance flows, although it seems clear that remittances reported in the Balance of Payments (BoP) statistics must be interpreted as a lower bound of their actual level. For instance, O’Neill

(2001) reports that remittances that are unknown or unofficial or which consist of non-monetary transfers are estimated to be 2 to 10 times greater than the officially reported flows; Sander (2003) conveys that informal remittances are estimated at 2,5 times the value of the formal flows; and Freund and Spatafora (2008) indicate that market observers suspect that, globally, informal remittance flows range from 50 per cent to 250 of recorded flows.

There is as yet no clear commonly agreed definition of what informal remittance systems (IRS) are. They are usually thought of as a residual category; every money transfer mechanism that is not formal —i.e. regulated. These systems adopt many different forms such as hand delivery/couriering, money transfers embedded on other business activities and/or cultural practices —e.g. *hawala*—, informal money transfer enterprises or migrant associations, micro-finance institution-based transfers, etc. The question of what is the importance of money that is sent through IRS and what is its influence on the formal recorded flows remains essentially unexplored. Moreover, academic research has not delved into the role of IRS in the financial inclusion of international migration.

Most previous studies looked at the determinant of formal remittances and the impact of these flows on different dimensions of development without accounting for the significance of informal remittances. In this paper, we look at the impact that IRS have on recorded remittance flows. The global emergence of remittances together with the challenges and controversies surrounding the expansion of IRS prompt some important questions:

- 1) Is there a substitution effect between formal and informal channels to remit money?

- 2) Do we observe significant differences between industrialized economies and developing countries?
- 3) What does this mean to the global debate on the legitimacy of IRS in the context of the financial inclusion of international migration?

After a brief literature review, this study proposes to answer these questions by constructing a 29 year panel covering 51 countries, and using the black market premium (BMP) on the dollar exchange rate as proxy for the activity of IRS. We propose that there is actually a strong substitution effect between formal and informal remittances, and that this effect is stronger in developing countries. Limitations and policy implications for financial inclusion are discussed.

## **2. Related Literature and hypothesis development**

### **2.1. Literature review**

IRS are financial services that traditionally operate outside of —or parallel to— the conventional regulated banking and financial channels, and enable to move value or funds from one geographic location to another (Financial Action Task Force (FATF), 2003). Therefore, informal remittances elude compliance with international regulatory regimes. Many IRS have long been in existence and they are deeply rooted in cultural traditional practices (Redin et al., 2013). Their modus operandi is frequently determined by a blend of economic incentives, social concerns and cultural codes<sup>1</sup>. IRS offer a rapid,

---

<sup>1</sup> The specific names used to denote these systems offer a glimpse of their ties to particular geographic regions and traditions. Some examples of this terminology are *hawala* —India, Pakistan and the Middle East—, *hundi* —Pakistan and Bangladesh—, *fei-ch'ien* —China and Southeast Asia—, *chit* —British territories of South East Asia—, *chop* —China—, *hui kuan* —Hong

low cost, reliable, versatile and culturally convenient service as opposed to the formal funds transfer mechanisms that are usually characterized by relatively high transaction costs, expensive fees, long processing and highly bureaucratic procedures. Several authors have stressed that these informal mechanisms actually offer an alternative to the formal financial institutions for those who are excluded from the conventional banking system due to a wide array of reasons; either because the sender or the beneficiary is located in remote villages (El-Qorchi et al., 2003; Thompson, 2011) or failed states (Lindley, 2009), for moral or religious motives (Tripp, 2006), because the cost of access to the formal financial institutions is too high (Passas, 2005) or because of distrust in the government and the formal banking system (Lowell and De la Garza, 2002). In this sense, IRS alleviate the financial exclusion of minorities.

Financial authorities (FATF, 2003) and users themselves (UAE Central Bank, 2002) convey that it is necessary to guarantee the security and the licit uses of IRS. However it is evident that Anti-Money Laundering and Countering the Financing of Terrorism (AML/CFT) regulation has not been successful (Verdugo, 2011); it criminalized IRS and it hampered their potential for the financial inclusion of many people in developing countries. Even though there is no reliable quantification of the dimensions of IRS, they are widely used in many non-Western countries. In these regions, IRS are perceived to serve “more than half of the world, far more than conventional banking, and they serve it well” (Houssein, 2005, p. 88).

Empirical studies on IRS are still scarce and limited in their scope. Pohit and Taneja (2000) studied informal *hawala* transactions between India, Bangladesh and

---

Kong—, *phai kwan* —Thailand—, *padala* and *paabot* —Philippines—, *Franco Valuta* —Somalia—, *chuyen tien tay ba* —Vietnam—, *mali a mbeleko* —Zambia—, *kyeyo money* —Uganda—, *Xawilaad* —Somalia— or *Black Market Peso Exchange* —Colombia.

Nepal, and they revealed that the transaction costs of IRS were significantly lower than those of formal channel. El-Qorchi et al (2003) designed the first simulation model to quantify the size of remittance funds sent through *hawala*. They showed that informal transfers tended to decline as the countries liberalized their financial system. More recently, using micro-level data from the Sylhet region in Bangladesh, Joarder and Saleh (2010) showed that migrants for which the cost of accessing the formal banking system is great tend to remit money through *hundi* rather than through formal channels.

The literature on the macroeconomic determinants of international remittances has neglected the issue of the different types of channels through which money is sent and so, it has ignored the informal flows of remittances that are not recorded in official statistics. Nevertheless, this strand of the literature reveals a list of variables that can be expected to significantly affect the volume of remittances that countries receive through formal transfers.

Empirical studies reveal that remittances are significantly and positively associated with the number of migrant workers (Lianos, 1997; Freund and Spatafora, 2005; Singh et al., 2010) and their wage rates or earnings (Lianos, 1997; Gupta, 2005; Schrooten, 2005; Lueth and Ruiz-Arranz, 2007). By contrast, researchers find that the level of remittances is significantly and negatively associated with inflation (Lianos, 1997), with macroeconomic instability in the home country (Lueth and Ruiz-Arranz, 2006), with the existence of a dual exchange rate system (Freund and Spatafora, 2005; Lueth and Ruiz-Arranz, 2008), with high fees to send money (Freund and Spatafora, 2005; Singh, 2010) and with weak infrastructure to transfer funds (Lueth and Ruiz-Arranz, 2008; Singh, 2010). Other researchers (El-Sakka and McNabb, 1999; Faini, 1994; Glytsos, 1997; Higgins et al., 2004) suggest that macroeconomic factors like interest rates, exchange rates, as well as political instability have an impact on the level of international

remittances received by countries. They argue that interest and exchange rates need to be competitive, and that countries need to be politically stable in order to encourage the flow of remittances to labor-sending countries. Furthermore, Wahaba (1991), El-Sakka and McNabb (1999), in their studies based on data from Egypt in the 1980's, and Elbadawi and Rocha (1992), who focus on the corridor of remittances between North Africa and Europe in the 1970's and 1980's, agree on the negative effect of the BMP on the flows of remittances.

There seems to be a consensus in the literature about the idea that remittances are pro-cyclical with respect to the host country economic situation. Several authors (Lianos, 1997; Gupta, 2005; Schrooten, 2005; Freund and Spatafora, 2005; Aydas et al., 2005; Lueth and Ruiz-Arranz, 2007; Adams, 2009; Singh et al., 2010; Frankel, 2011; Abdith et al., 2012) find evidence to support this statement. However, the hypothesis that remittances are counter-cyclical with respect to the home country economic situation is not straightforward; many studies (Gupta, 2005; Schrooten, 2005; Aydas et al., 2005; Bouhga-Hagbe, 2006; Lueth and Ruiz-Arranz, 2007; Singh et al., 2010; Frankel, 2011) offer evidence to support this idea, whereas others (Sayan, 2006; Adams, 2009) refute such premise.

## **2.2. Hypothesis**

The market of remittance transfers evolved through spontaneous order. In spite of the efforts to regulate it, and integrate the transactions into the formal financial markets, the share of the market participants that remains operating informally is significant. This fact is specially relevant in certain regions of the world in which the IRS have been—for cultural reasons—the traditional way of moving money.

This paper proposes a new approach to analyze the impact of IRS on the formal flows of remittances recorded in the BoP statistics. This new approach is based on two keystones; the use of a proxy to account for the activity of IRS and the construction of a new panel dataset, which includes new variables that have been created using data on bilateral migration.

Given the informal nature of the activity of IRS —that is characterized by the lack of accessible records—, we use the BMP on the dollar exchange rate as proxy, like it has been suggested by many authors. Katseli and Glytsos (1986), Wahba (1991), Elbadawi (1992), Elbadawi and Rocha (1992), El-Sakka and McNabb (1999), El-Qorchi et al. (2003), and Ruiz and Vargas-Silva (2009) advocate that the BMP is a key factor behind remitters' economic incentives to use an informal mechanism, rather than some sanctioned official channel, for purposes of sending funds to their home country.

The premium is defined as the percentage difference between the black market rate and the official exchange rate. In some respects, black market exchange rate systems are similar to dual rate systems since in practice there are there are two effective exchange rates. Yet, while the two exchange rates under a dual rate system are set by the authorities, a parallel or a black market is an illegal structure that arises for two fundamental reasons; either because a government intervention in the official market produces an excess supply or demand for a currency, or as a byproduct of underground economic activities that could not be sanctioned in the regulated market.

The willingness to transfer funds through the black market using IRS may be due to pure economic incentives —e.g. the taxation or any type of restriction imposed on official channels, the low costs of IRS, etc—, but also it may be a consequence of the financial exclusion of migrant workers in the host country or that of their families in the country of origin. According to academics and international institutions —see for



instance, Carbó et al., 2005; Claessens, 2006; Barr et al., 2007—, financial exclusion may be caused either by the lack of formal institutions to carry out remittance transfers, difficulties in accessing financial services, or by cultural reasons —i.e. voluntary self-exclusion due to, for instance, the lack trust on the regulated banking system, religious norms like the *Shariah*, or traditional codes whereby women may not hold a bank account.

The main source of profit for the dealers of IRS is the foreign exchange arbitrage between formal and parallel markets (El-Qorchi et al., 2003; Passas, 2006) provided that the fees for their services are very low, sometimes even negligible. Thus, the greater the size BMP the more room IRS have for profit. Beyond local currencies, the dealers and also the remitters use hard currencies for their operations, mainly because they do not fluctuate excessively in the short run, they serve as a hedge against inflation and they are easily convertible to other currencies. Although there exist black markets for several currencies, the exchange rate data of other currencies rather than the U.S. Dollar is not available. Nevertheless, the U.S. Dollar is widely used in black market transactions worldwide serving as a "pass-through" vehicle to precious metals such as gold, energy uses such as oil, and other monetary units. Therefore, for the purpose of this paper, the BMP on the dollar exchange rate constitutes a good proxy for the activity of IRS.

In light of the above we might hypothesize that, in general, the BMP has a negative impact on the recorded flows of remittances. That is to say, there is a substitution effect between formal and informal channels to send remittances. This effect is associated with the economic barriers behind the financial exclusion of the migrant population and with the voluntary self-exclusion due to cultural issues or the lack of access to formal banking services. We expect this substitution effect to be greater in developing countries where

IRS have been traditionally used for centuries and in geographic areas that receive migrant workers from this countries.

### 3. The sample, method of estimation and model equation

#### 3.1. Method of estimation

To explore these hypotheses, we construct a new panel data including as many as 51 countries over the period 1970-1998. The list of countries included in the sample is showed in the appendix. The base model is written as follows:

$$\begin{aligned}
 \text{Growth Rem}_{it} = & \beta_1 \text{Rem}_{it-1} + \beta_2 \text{BMP}_{it} + \beta_3 \text{Migration Stock}_{it} + \beta_4 \text{Home Income}_{it} + \\
 & + \beta_5 \text{Host Income}_{it} + \beta_6 \text{NEO}_{it} + \beta_7 \text{KAOPEN}_{it} + \\
 & + \beta_8 \text{Financial Development}_{it} + \eta_i + \varepsilon_{it}
 \end{aligned} \tag{1}$$

The subscript  $(it)$  refers to the country index and time index, respectively. All the variables are on annual basis.

$\eta_i$  is the unobserved time-invariant country-specific effect.

$\varepsilon_{it}$  is the error term.

#### The Dependent Variable:

*Growth Rem*: (real) growth rate of remittance inflows; calculated from World Development Indicators (WDI).

#### The Explanatory Variables:

*Rem*: natural log of incoming remittances (real dollars) measured in levels; from

WDI.

*BMP*: Black Market Premium; from Pick's Currency Yearbook (various editions).

*Migration Stock*: Stock of migrant workers, i.e. the number of nationals that were born in a given country and live in a foreign country; calculated from global bilateral migration matrices from Özden et al. (2011). This measure underestimated the actual stock of migrants as it does not account from illegal or undocumented emigrants.

*Home Income*: Income per capita in the migrant's home country. It is proxied by the corresponding GDP per capita; Penn World Table 7 (PWT 7).

*Host Income*: Host country income per capita; it is a proxy for the income earned by migrants. The variable is constructed combining the information from the country GDP per capita from PWT 7 and the bilateral migration matrices from Özden et al. (2011). In particular, for a host country  $i$ , its income per capita is measured as the weighted average GDP per capita of the countries where expatriate migrants live  $j$ . The weights  $\varpi_{jt}$  are the share of country  $i$ 's migrants that live in country  $j$  at time  $t$ —i.e.:

$$\text{Host Country Income}_{it} = \sum_{j \neq i} \varpi_{jt} \text{GDP}_{jt}$$

*NEO*: Net Errors and Omissions (% of GDP); from WDI. This variable is included to account for part of the under-recording issues of the information of remittances from the BoP. According to Freund and Spatafora (2005, 2008) besides that informal remittances are not recorded, neither it is—in many cases—the money sent through MTOs. This share of not recorded formal transfers ends up in the statistical discrepancy of the BoP: “Net Errors and Omissions”. In addition, this item also controls for changes in the measurement of remittances.

*KAOPEN*: Capital account openness index by Chinn and Ito (2008). It measures the extensity of capital controls based on the information from IMF's Annual Report on

Exchange Arrangements And Exchange Restrictions (AREAER).

*Financial Development*: Ratio of domestic deposits to GDP, i.e. money and quasi money (M2) as percentage of GDP; from International Financial Statistics (IFS) database, and World Bank and OECD GDP estimates.

On a second stage, to explore the differences between industrialized and developing countries, the following cross product variables are added to Equation (1). The new model is written as follows:

$$\begin{aligned} \text{Growth Rem}_{it} = & \beta_1 \text{Rem}_{it-1} + \beta_2 \text{Migration Stock}_{it} + \beta_3 \text{Home Income}_{it} + \\ & + \beta_4 \text{Host Income}_{it} + \beta_5 \text{NEO}_{it} + \beta_6 \text{KAOPEN}_{it} + \\ & + \beta_7 \text{Financial Development}_{it} + \beta_8 \text{OECD} \times \text{BMP}_{it} + \\ & + \beta_9 \text{DEVELOPING} \times \text{BMP}_{it} + \eta_i + \varepsilon_{it} \end{aligned} \quad (2)$$

where *OECD* is a dummy variable that takes the value 1 for OECD countries, and 0 otherwise. In the same way, *DEVELOPING* is another dummy variable that takes the value 1 for developing countries, and 0 otherwise.

### 3.2. System GMM modeling

The empirical model technique that we use is the linear generalized method of moments —system GMM— methodology developed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). The application of system GMM is justified as an effective approach to deal with a number of methodological issues associated with remittance regressions, specifically:

a) *Endogeneity bias*: the remittances and some macroeconomic variables on the right-hand-side of Equation (1) are typically endogenous. This is a common feature of regression models that examine the determinants of remittance flows —see for instance,

Niimi and Özden, 2006; McKenzie and Sasin, 2007. In particular, we may encounter a reverse causation relationship between remittances and home country income —proxied by GDP per capita<sup>2</sup> or financial development<sup>3</sup>. Consequently we should adopt an econometric approach that is consistent and efficient in the presence of endogenous regressors to insure that the estimation of our model is unbiased. By construction, system GMM estimators embody the assumption of endogeneity and use moment conditions to generate a set of valid instruments for the endogenous explanatory variables that may significantly improve efficiency (Blundell and Bond, 1998; Kosack and Tobin, 2006; Roodman, 2006).

2) *Omission Bias*: remittances may be related to a wide range of characteristics we lack information on —e.g. institutional variables, cultural characteristics, transaction costs, etc. The presence of unobserved time-invariant cross sectional-specific effects in Equation (1) would bias our results because of the likelihood of significant correlation between country specific effects with initial level of remittances. As opposed to ordinary least squares (OLS) and instrumental variable (IV) estimation, the system GMM approach takes into account these effects.

3) *Static Framework*: As a result of the strong persistence behavior of remittance inflows and the multiplier effects (Glytsos 2005; Karpestam, 2011), dynamic approaches such as system GMM fit remittance models better than static panel approaches.

---

<sup>2</sup> Chami et al. (2008), Giuliano and Ruiz-Arranz (2009), Catrinescu et al. (2009), Mundaca (2009), Barajas et al. (2009), Rao and Hassan (2011) and Benmanoun and Lehnert (2013) offer different estimates of the impact that remittances have on long-term growth

<sup>3</sup> Aggarwal et al. (2011), Demirgüç-Kunt et al. (2011), Freund and Spatafora (2008) highlight that, to the extent that remittances are channeled through banks, or make their way into bank accounts, they will directly affect economic development

To explain how system GMM model deal with the issues listed above, we shall rewrite Equation (1) as follow:

$$\Delta Y_{it} = \beta_1 Y_{it-1} + \beta_2 X_{it} + v_i + u_{it} \quad (3)$$

or equivalently,

$$Y_{it} = (1 + \beta_1)Y_{it-1} + \beta_2 X_{it} + v_i + u_{it} \quad (4)$$

where  $\Delta Y_{it}$  is the growth rate of real remittance inflows,  $Y_{it-1}$  is the log of remittances,  $X$  is the set of explanatory variables,  $v_i$  is an unobserved country-specific effect,  $u_{it}$  is the time-varying error term, and the subscript  $(it)$  denotes, respectively, the country and the year.

Following Arellano and Bond (1991), by first-differencing Equation (2) we obtain:

$$\Delta Y_{it} = (Y_{it} - Y_{it-1}) = (1 + \beta_1)\Delta Y_{it-1} + \beta_2 \Delta X_{it} + \Delta u_{it} \quad (5)$$

This transformation removes the  $v_i$ , thus it eliminates a potential source of omitted variable bias in estimation. Additionally, it helps overcome endogeneity by using lagged values of the explanatory variables as instruments. Yet, first-differencing leads to a new statistical issue as the constructed differenced error term ( $u_{it}$ ) is now correlated with the differenced lagged variable. As a solution, Arellano and Bover (1995) and Blundell and Bond (1998) propose the system GMM estimator which improves efficiency by estimating concurrently two distinctly instrumented equations: the first-differenced equation—i.e. Equation (5) above—and the original equation in levels—i.e. Equation (4) above.

The consistency of the system GMM estimates critically depend on two conditions; the validity of the additional instruments and the absence of second-order autocorrelation in the residuals. To check these two conditions, Arellano and Bond (1991)

and Arellano and Bover (1995) propose the Sargan/Hansen test of over-identification—that tests the validity of the instruments—and the Arellano-Bond (AR2) autocorrelation—that tests for the absence of second-order autocorrelation. The p-values for both tests are reported on Table 1; their high values insure the validity of the model. In the appendix, we report summary statistics and the correlations for the central variables in the study.

We used STATA version 12 to run the estimation of our model and David Roodman (2006)'s program *xtabond2*. The regression results are presented in Table 1.

**Table 1. Remittances regression using system GMM**

<i>Dependent variable:</i> Growth rate of real remittance inflows	(1)	(2)
Lagged Rem (t-1)	-1.089 *** (0.196)	-1.104 *** (0.208)
BMP	-0.001 *** (0.000)	-
OECDxBMP	-	-0.014 (0.014)
DEVELOPINGxBMP	-	-0.001 *** (0.000)
Migration stock	0.057 (0.234)	0.058 (0.237)
Home income	5.469 *** (1.440)	5.592 *** (1.480)
Host income	-0.139 (0.146)	-0.145 (0.146)
NEO	0.015 ** (0.008)	0.015 ** (0.008)
KAOPEN	0.084 * (0.047)	0.079 (0.049)
Financial development	0.064 (0.758)	0.061 (0.767)
Observations	775	775
Countries	45	45
Hansen test (p-value)	0.910	0.795

Arellano-Bond Test for Autocorrelation (p-value)	0.547	0.394
--	-------	-------

Notes: Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

### 3.3. Results and Discussion

Column (1) in Table 1 shows the results from estimating Equation (1) using the sample of countries described in the appendix. According these results, the coefficient for the BMP is, as expected, negative and significant at 1%. This presents strong evidence that there is a substitution effect between formal and informal channels to send remittances. The income level in the home country and the extent of capital account openness are also positively and significantly associated with the growth of remittance flows. The statistical discrepancy of NEO, which accounts for changes in the measurement of remittances in the BoP, is also a significant determinant of the fluctuations of formal remittances.

Column (2) shows the regression output from splitting the BMP into two different cross-product variables that capture the behavior of the BMP in developing countries and in high-income economies separately. As expected, both coefficients are negative, but only the coefficient of the BMP for developing economies is significant; at 1%. The coefficient of the BMP for OECD countries is not significant. In order to further explore the idea that the substitution effect between formal and informal channels to remit money is greater in developing countries, we conducted a hypothesis test to compare the individual coefficients of the two cross product variables. A directional (one-tailed) test was used for this analysis because the contribution of the BMP to the growth of recorded remittances was hypothesized to be negative, and greater in absolute terms in developing economies than in industrialized countries. Therefore, the null hypothesis is:



$$H_o : \beta_{BMP \times DEVELOPING} < \beta_{BMP \times OECD}^4$$

The p-value of the test is 0.18. Hence, the null hypothesis of the test cannot be rejected at any significance level equal or smaller than 10%. This suggests that the influence of the BMP on formal remittances is greater in developing countries.

The substitution effect that we observe empirically between formal transfer mechanisms and IRS may be explained by two fundamental reasons: the plain economic incentives that drive the decision making of migrants and the financial exclusion that embraces international migration. Nevertheless, both causes are closely interrelated.

Broadly speaking, financial exclusion refers to the presence of barriers that difficult the access to products or services —included the access to credit— offered by regulated financial institutions in a safe, convenient and affordable manner. Beyond economic barriers, social, cultural and political institutions, processes or attitudes impede the access to banking services to migrants. As Datta (2012) explains, the use of “alternative” financial agents and institutions is demonstrated to be not just a result of being “expelled” from the formal financial sector, but, at least in part, an outcome of preferences for informal financial products and processes. Furthermore the financially (self-)excluded are quite often ingenious at overcoming this lack of convenient access (Collins et al., 2009). In the light of this argument it follows that “formal” is not necessarily synonymous of “ethical” and, by the same token, “informal” doesn’t certainly mean “unethical”.

Financial inclusion is directly instrumental to economic development, poverty reduction and the improved welfare of all citizens (Hudon, 2009). Financial exclusion may result into social exclusion and deprivation (European Commission, 2008) and it

---

<sup>4</sup> *Note:* The subscript  $(BMP \times DEVELOPING)$ , and  $(BMP \times OECD)$  refers to the cross product variables shown in Column (2) of Table 1.

broadens the gap between the financial integrated and financial excluded people. Therefore, in the light of the consequences of financial exclusion, the existence and use of IRS constitutes a moral claim, which may or may not be eventually assimilated into national and international law.

IRS help to mitigate the financial exclusion surrounding international migration, specially the financial barriers in developing countries—that are, at the same time, the net recipients of remittances. Carbó et al (2005) stress that while some dimensions of financial exclusion in developing countries have similarities to those in developed countries, the self-exclusion is particular; some ethnic communities or people from certain religious traditions judge the services offered as not appropriated to their beliefs and cultural norms. There is a strong lack of trust in formal banking institutions, people have low literacy level, lack of awareness and/or knowledge/understanding of financial products, and there are powerful cultural obstacles—e.g., gender and cultural values—(FATF, 2011).

Financial exclusion has economic, social, legal, cultural and even religious causes and therefore a complex solution. The coexistence of a regulated financial industry and large parallel informal banking system constitutes an important concern for politicians and financial authorities. In this sense, while there is a general consensus regarding the desirability of developing a strategy for tackling financial exclusion—e.g. G20 Financial Inclusion Experts Group's *Nine Principles for Innovative Financial Inclusion*—, it also emerges the necessity and complexity of harmonizing this spirit with the preservation of the formal financial system (Atkinson and Davoudi, 2000; De Koker, L. 2006; Bester et al. 2008; Isern and De Koker 2009).

#### 4. Summary and Policy Recommendations

The results presented on this research broadly confirm our hypotheses regarding the dominant contribution of the BMP to changes in recorded remittances. The main substantive finding is that there exists a strong substitution effect between formal and informal channels to remit money. Such substitution effect is greater in developing countries and it is related to the economic barriers to access formal transfer systems and with the financial exclusion of international migration. Accordingly, governments in destination and origin countries should facilitate international remittances by removing barriers to international formal money transfers and implementing effective—but not restrictive—policies to encourage migrant participation in economic and financial activities. This objective becomes especially imperative in labor exporting countries—i.e. developing countries—where there is a traditional use of IRS and greater barriers to financial inclusion of the poor.

In particular, we propose a two-pronged strategy to tackle on the one hand the economic barriers and costs to channel remittances through regulated operators and, on the other hand, policies to confront the cultural and sociological issues of financial self-exclusion. This sort of policy implies:

*Reducing the cost of opening a bank account and eliminate unnecessary documentation requirements.*

*Avoiding criminalization of legitimate users of IRS, such as migrants sending money to their home country. This would plunge the informal economic activity further underground.*

*Improving access to financial services in rural areas—e.g. through mobile money.*

*Encouraging competition and foster the entrance of new operators in the market of international remittance transfers in order to help decrease remittance costs.*

*Encouraging financial service providers to offer adapted products and services for low-income populations and cash-economy agents. These products and services would need to be aligned with the —more deeply rooted— cultural codes of behavior and values of migrant communities living in a foreign country.*

*Integrate informal dealers of IRS into regulated remittance transfer operators in order to foster the trust of migrant communities in the formal banking institutions*

*Providing reliable information to migrants on transfer services and their costs, and promote their financial education*

*Encouraging further research on this area of IRS, international migration and inclusive finance*

It must be acknowledged that financial exclusion works against effective AML/CFT policies (FATF, 2011). Yet, such policies should not enlarge the barriers to financial inclusion for the poor. Financial inclusion and AML/CFT regulation should be complementary and mutually supportive. Indeed, an effective AML/CFT regime calls for the recognition of country specific —social, cultural and economic— characteristics, the risks and national priorities in the application of such regulatory measures, as well as promoting financial inclusion based on flexible AML/CFT principles (Shehu, 2012). AML/CFT regulation should not criminalize IRS if these mechanisms are the single alternative well tailored to meet the socioeconomic and cultural characteristics of migrant communities.

The results of this paper make to converge the research on the macroeconomic determinants of remittances and the study of IRS. These two areas have remained basically independent from each other, even though both of them have great importance in the context of the financial exclusion of international migration. The economic policy and business response suggested in this study would enable developing countries to

reduce their dependence on public foreign aid and boost remittances as a source to finance development, which has proved to be a greater contributor of economic growth (Benmamoun and Lehner, 2013).

However, this study is not without its limitations. One major limitation is that the dataset do not comprise data beyond 1998. The fundamental reason for that is that the information on the BMP stopped being published at that time. This variable could be retrieved for a few countries—from alternative sources—until the present period but it is not possible to construct a comprehensive panel dataset such as the one used for this analysis. Hence, future research would benefit from additional empirical studies on the role of IRS in the financial exclusion of migrants after the global wave of exchange rate liberalization that took place after 1998. Furthermore, more research is needed on the measurement and quantification of financial exclusion and informal flows of remittances, as well as on better recording of formal remittances.

## Appendix

**Table A.1. List of countries**

<b>Country</b>	<b>Group</b>	<b>Country</b>	<b>Group</b>	<b>Country</b>	<b>Group</b>
Argentina	Dev. Country	Guatemala	Dev. Country	Netherlands	OECD
Australia	OECD	Honduras	Dev. Country	New Zealand	OECD
Austria	OECD	Indonesia	Dev. Country	Norway	OECD
Benin	Dev. Country	India	Dev. Country	Paraguay	Dev. Country
Bolivia	Dev. Country	Ireland	OECD	Peru	Dev. Country
Brazil	Dev. Country	Israel	OECD	Philippines	Dev. Country
Colombia	Dev. Country	Italy	OECD	Portugal	OECD
Costa Rica	Dev. Country	Jamaica	Dev. Country	South Africa	Dev. Country
Denmark	OECD	Jordan	Dev. Country	Spain	OECD
Dominican Rep.	Dev. Country	Japan	OECD	Sri Lanka	Dev. Country
Ecuador	Dev. Country	Kenya	Dev. Country	Sweden	OECD
El Salvador	Dev. Country	Laos	Dev. Country	Switzerland	OECD
Finland	OECD	Malaysia	Dev. Country	Tanzania	Dev. Country
France	OECD	Malawi	Dev. Country	Thailand	Dev. Country
Germany	OECD	Mauritius	Dev. Country	Turkey	Dev. Country

Ghana	Dev. Country	Mexico	Dev. Country	UK	OECD
Greece	OECD	Nepal	Dev. Country	Venezuela	Dev. Country

**Table A.2. Summary Statistics**

<i>Variable</i>	<i>Observations</i>	<i>Mean</i>	<i>Std. Dev.</i>
Growth rate remittances	1033	0.081	0.570
(Log of) remittances (t-1)	1027	19.601	2.116
BMP	1439	25.480	103.105
(Log of) Migration stock	1479	12.801	1.539
(Log of) Home income	1479	8.715	1.164
(Log of) Host income	1479	8.835	0.902
NEO	1251	0.141	2.255
KAOPEN	1431	-0.074	1.412
(Log of) Financial development	1249	3.504	0.614

**Table A.3. Correlations**

<i>Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Growth rem	1								
(2) Rem (t-1)	-0.19	1							
(3) BMP	-0.06	-0.16	1						
(4) Migr. stock	-0.01	0.50	-0.08	1					
(5) Home income	-0.06	0.25	-0.20	0.27	1				
(6) Host income	-0.03	0.18	-0.17	-0.06	0.60	1			
(7) NEO	0.02	-0.04	-0.01	-0.01	-0.06	-0.04	1		
(8) KAOPEN	-0.00	0.12	-0.23	0.22	0.56	0.26	-0.10	1	

(9) Fin. Dev.	<i>-0.04</i>	<i>0.17</i>	<i>-0.14</i>	<i>0.13</i>	<i>0.56</i>	<i>0,17</i>	<i>0,01</i>	<i>0.42</i>	1
---------------	--------------	-------------	--------------	-------------	-------------	-------------	-------------	-------------	---



## References

Adams, R. H., and J. Page (2003), "International Migration, Remittances, and Poverty in Developing Countries", Policy Research Working Paper, 3179, The World Bank.

Adams, R. H. (2009), "The Determinants of International Remittances to Developing Countries", *World Development* 37 (1), 93-103.

Aggarwal, R., A. Demirgüç-Kunt and M. S. Martínez Pería (2011), "Do remittances promote Financial development?", *Journal of Development Economics* 96, 255-264.

Atkinson, R. and S. Davoudi (2000), "The Concept of Social Exclusion in the European Union: Context, Development and Possibilities", *Journal of Common Market Studies* 38 (3): 427-48.

Arellano, M., and S. Bond (1991), "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equation," *Review of Economic Studies*, 58 (2), 277-297.

Arellano, M., and O. Bover (1995), "Another Look at Instrumental Variable Estimation of Error-Component Models," *Journal of Econometrics*, 68 (1), 29-51.

Aydas, S. T., B. Neyapti, and V. Metin-Ozcan (2005), "Determinants of Workers' Remittances. The Case of Turkey", *Emerging Markets Finance and Trade* 41 (3), 53-69.

Barajas, A., R. Chami, C. Fullenkamp, M. Gapen and P. Montiel (2009), "Do Workers' Remittances Promote Economic Growth?" IMF Working Paper WP/09/153.

Barr, M., A. Kumar and R. Litan (2007), *Building Inclusive Financial Systems*, Brookings Institution Press, Washington D. C.

Benmamoun M. and K. Lehnert (2013), "Financing growth: comparing the effects of FDI, ODA and International Remittances", *Journal of Economic Development* 38 (2), 43-65.

Bester, H., D. Chamberlain, L. De Koker, C. Hougaard, R. Short, A. Smith and R. Walker (2008), *Implementing FATF Standards in Developing Countries and Financial Inclusion: Findings and Guidelines*, Genesis Analytics, Johannesburg, South Africa.

Bilsborrow, R. E., G. Hugo, A. S. Oberai and H. Zlotnik (1997), *International Migration Statistics: Guidelines for Improving Data Collection Systems*, International Labour Office, Geneva.

Blundell, R., and S. Bond (1998), "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics*, 87(1), 115-143.

Bouhga-Hagbe, J. (2006), "Altruism and Workers' Remittances: Evidence from selected Countries in the Middle East and central Asia", International Monetary Fund Working paper WP/06/130.

Bourguignon, F. (2006), *Global Economic Prospects, 2006: Economic Implications of Remittances and Migration*, The International Bank for Reconstruction and Development, The World Bank, Washington D.C.

Carbó, S., E. P. M. Gardener and P. Molyneaux (2005), *Financial Exclusion*, Palgrave Macmillan Studies in Banking and Financial Institutions.

Catrinescu, N., M. Leon-Ledesma, M. Piracha, and B. Quillin (2009), "Remittances, Institutions and Economic Growth", *World Development* 37 (1), 81-92.

Chami, R., A. Barajas, T. Cosimano, C. Fullenkamp, M. Gapen and P. Montiel (2008), "Macroeconomic Consequences of Remittances", IMF Occasional Paper No. 259.

Chinn, M. D. and H. Ito (2008), "A New Measure of Financial Openness", *Journal of Comparative Policy Analysis* 10 (3), 309-322.

Claessens, S. (2006), "Access to Financial Services: A Review of the Issues and Public Policy Objectives", *the World Bank Research Observer* 21 (2), 207-240.

Collins D., J. Morduch, S. Rutherford and O. Ruthven (2009), *Portfolios of the Poor: How the World's Poor Live on \$2 a Day*, Princeton University Press.

Currency Data and Intelligence, Ltd.: *World Currency Yearbook* (formerly *Pick's Currency Yearbook*), various editions.

De Koker, L. (2006), "Money Laundering Control and Suppression of Financing of Terrorism: some Thoughts on the Impact of Customer due Diligence Measures on Financial Exclusion", *Journal of Financial Crime* 13 (1), 26-50.

Datta K. (2012), *Migrants and Their Money: Surviving Financial Exclusion*, Policy Press, Bristol.

Demirguc-Kunt, A., J. E. Lopez-Cordova, M. S. Martínez Pería and C. Woodruff (2011), "Remittances and Banking Sector Breadth and Depth: Evidence from Mexico", *Journal of Development Economics* 95, 229–241.

Elbadawi, I. (1992), "Macroeconomic Management and the Black Market for Foreign Exchange in Sudan", The World Bank Policy Research Working Paper, No. 859.

Elbadawi, I. A. and R. Rocha (1992), "Determinants of Expatriate Workers' Remittances in North Africa and Europe", Working Paper WPS 1038, Country Economics Department, The World Bank

El-Qorchi, M., S. M. Maimbo and J. Wilson (2003), "Informal Funds Transfer Systems", International Monetary Fund Occasional Paper No. 222.

El-Sakka, M. I. T. and R. McNabb (1999), "The Macroeconomic Determinants of Emigrant Remittances", *World Development* 27 (8), 1493-1502.

European Commission (2008), *Financial Services Provision and Prevention of Financial Exclusion*, European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities.

Faini, R. (1994), "Workers remittances and the real exchange rate", *Journal of Population Economics* 7 (2), 235-245.

FATF (2003), *Combating the abuse of Alternative Remittance Services: International Best Practices*, FATF-GAFI, Paris.

FATF (2011), *Anti-money laundering and terrorist financing measures and Financial Inclusion*, FATF-GAFI, Paris.

Frankel, J. (2011), "Are Bilateral Remittances Countercyclical?", *Open Economies Review*, 22 (1), 1-16.

Freund, C. and N. Spatafora (2005), "Remittances: costs, determinants, and informality", World Bank Policy Research Working Paper No. 3704.

Freund, C. and N. Spatafora (2008), "Remittances, Transaction Costs, and Informality", *Journal of Development Economic* 86, 356-366.

Glytsos, N. P. (2005), "The Contribution of Remittances to Growth: a Dynamic Approach and Empirical Analysis", *Journal of Economic Studies*, 32 (6), 468-496.

Government Accountability Office (2005), "International Remittances: Information on Products, Costs, and Consumer Disclosures," Report to the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, GAO-06-204.

Giuliano, P. and M. Ruiz-Arranz (2009), "Remittances, Financial Development and Growth", *Journal of Development Economics*, 90 (1), 144-152.

Glytsos, N. (1997), "Remitting behavior of "temporary" and "permanent" migrants: The case of Greeks in Germany and Australia", *Labour* 11, 409-435.

Gupta, P. (2005), "Macroeconomic Determinants of Remittances: Evidence from India", International Monetary Fund Working Paper WP/05/224.

Higgins, M., A. Hysenbegasi and S. Pozo (2004), "Exchange rate uncertainty and workers' remittances", *Applied Financial Economics* 14, 403-411.

Houssein, D. H. (2005), "Somalia: The Experience of *Hawala* Receiving Countries" in International Monetary Fund, Monetary and Financial Systems Department (eds.), *Regulatory Frameworks for Hawala and Other Remittance Systems*, International Monetary Fund, Washington D.C., pp. 87-93.

Huddon, M. (2008), "Should Access to Credit be a Right?", *Journal of Business Ethics* 84, 17-28.

Isern, J., and L. De Koker (2009), "AML/CFT: Strengthening Financial Inclusion and Integrity", Focus Note 56. CGAP, Washington, DC,

Joarder, M. A. M. and U. Saleh (2010), "Estimating the Economic Model of *Hundi* Using Micro-level Data", *Asia Europe Journal* 8 (1), 61-75.

Karpestam, R. P. D. (2011), "Dynamic Multiplier Effects of Remittances in Developing Countries", *Journal of Economic Studies* 39 (5), 512-536.

Katseli, L. and N. Glytsos (1986), "Theoretical and empirical determinants of international labour mobility: a Greek-German perspective", Centre for Economic Policy Research Discussion Paper 148.

Kim, E. J., and W. Shaw (2003), "Living Up to the Monterrey Commitments: Raising Aid and Ensuring Its Effectiveness", in The World Bank (Ed.), *Global Development Finance. Striving for Stability in Development Finance*, The World Bank: Washington D.C., pp. 125 – 154

Lianos, P. T. (1997), "Factors Determining Migrant Remittances: The Case of Greece", *International Migration Review* 31 (1), 72-87.

Lindley, A. (2009), "Between 'Dirty Money' and 'Development Capital': Somali Money Transfer Infrastructure Under Global Scrutiny", *African Affairs* 108 (433), 519-539.

Lowell, B. L. and R. O. De la Garza (2002), "A New Phase in the Story of Remittances," in De la Garza, R. and B.L. Lowell (eds.), *Sending Money Home: Hispanic*

*Remittances and Community Development*, Lanham, MD: Rowman and Littlefield Publishers, pp. 3–27.

Lueth, E., and M. Ruiz-Arranz (2006), “A Gravity Model of Workers’ Remittances”, International Monetary Fund Working Paper WP/06/290.

Lueth, E. and M. Ruiz-Arranz (2007), “Are Workers’ Remittances a Hedge Against Macroeconomic Shocks? The Case of Sri Lanka”, International Monetary Fund Working Paper WP/07/22.

Lueth, E. and M. Ruiz-Arranz (2008), “Determinants of Bilateral Remittance Flows”, *The B.E. Journal of Macroeconomics* 8 (1) (Topics), Article 26.

Mckenzie, D. and M. J. Sasin (2007), “Migration, Remittances, Poverty, and Human Capital: Conceptual and Empirical Challenges”, World Bank Policy Research Working Paper 4272.

Mundaca, G. (2009), “Remittances, Financial Market Development, and Economic Growth: The Case of Latin America and the Caribbean”, *Review of Development Economics* 13 (2), 288–303.

Niimi, Y. and Ç. Özden (2006), “Migration and Remittances: Causes and Linkages”, World Bank Policy Research Working Paper 4087.

O’Neill, A. C. (2001), “Emigrant Remittances: Policies to Increase Inflows and Maximize Benefits”, *Indiana Journal of Global Legal Studies* 9 (1), 345-360.

Özden, Ç., C. R. Parsons, M. Schiff and T. L. Walmsley (2011), “Where on Earth is Everybody? The Evolution of Global Bilateral Migration 1960–2000”, *World Bank Economic Review* 25 (1), 12-56.

Passas, N. (2005), ‘Formalizing the Informal? Problems in National and International Regulation of Hawala’ in International Monetary Fund, Monetary and

Financial Systems Department (eds.), *Regulatory Frameworks for Hawala and Other Remittance Systems*, (International Monetary Fund, Washington D.C.), pp. 7-16.

Passas, N. (2006), "Demystifying *Hawala*: A Look into its Social Organization and Mechanics", *Journal of Scandinavian Studies in Criminology and Crime Prevention* 7, 46-62.

Penn World Table (2002), Version 7,  
[https://pwt.sas.upenn.edu/php\\_site/pwt70/pwt70\\_form.php](https://pwt.sas.upenn.edu/php_site/pwt70/pwt70_form.php).

Pohit, S. and N. Taneja (2000), *India's Informal Trade with Bangladesh and Nepal: A Qualitative Assessment*, New Delhi: Council for Research on International Economic Relations.

Rao, B.B. and G. M. Hassan (2011), "A panel data analysis of the growth effects of remittances", *Economic Modelling* 28, 701-709.

Ratha, D. (2003), "Workers' Remittances: An Important and Stable Source of External Development Finance" in World Bank (eds.) *Global Development Finance 2003: Striving for Stability in Development Finance*, The World Bank: Washington, DC, pp. 157-175.

Redín, D. M., R. Calderón and I. Ferrero (2012), "Exploring the Ethical Dimension of *Hawala*", *Journal of Business Ethics*, September 2013, pp. 1-11.

Roodman, D. (2009), "How to do *xtabond2*: and Introduction to difference and system GMM in Stata", *Stata Journal* 9 (1), 86-136.

Ruiz, I. and C. Vargas-Silva (2009), "To Send, or Not to Send: That is the Question. A Review of the Literature on Workers' Remittances", *Journal of Business Strategies* 26 (1), 73-98.

Sander, C. (2003), "Capturing a market share? Migrant remittance transfers and commercialisation of microfinance in Africa", Conference on Current Issues in Microfinance, Johannesburg, 12-14 August.

Sayan, S. (2006), "Business Cycles and Workers' Remittances: How Do Migrant Workers Respond to Cyclical Movements of GDP at Home?", International Monetary Fund Working Paper WP/06/52.

Schrooten, M. (2005), "Bringing Home the Money - What Determines Worker's Remittances to Transition Countries?", Discussion Paper Series a466, Institute of Economic Research, Hitotsubashi University.

Shehu, A. Y. (2012), "Promoting Financial Inclusion for Effective Anti-Money Laundering and Counter Financing of Terrorism (AML/CFT)", *Crime Law Soc Change* 57, 305-323

Singh, B. (2010), "Workers' Remittances to India: An Examination of Transfer Cost and Efficiency", *International Migration* 48 (5), 63-88.

Singh, R. J., M. Haackerb, K. Lee, and M. Le Goff (2010), "Determinants and Macroeconomic Impact of Remittances in Sub-Saharan Africa", *Journal of African Economies* 20 (2), 312-340.

Thompson, E. A. (2011), *Trust is the Coin of the Real: Lessons from the Money Men in Afghanistan*, Cambridge University Press, New York, NY.

Tripp, C. (2006), *Islam and the Moral Economy. The Challenge to Capitalism*, Cambridge University Press, New York, NY.

UAE Central Bank (2002), *Abu Dhabi Declaration on Hawala*, Abu Dhabi May 16, 2002.

Verdugo, C. (2011), "Compliance with the AML/CTF International Standards: Lessons from a Cross-Country Analysis", IMF Working Paper WP/11/177.

Wahba, S. (1991), "What Determines Workers' Remittances?", *Finance and Development* 28 (4), 41-44.



World Bank (2011), *Migration and Remittances Factbook 2011*, World Bank; Washington D.C.

Yang, D. (2011), "Migrant Remittances", *Journal of Economic Perspectives* 25, 129-152.